

Arizona Public Service - April RPAC Meeting Minutes

Date	Location	Start	Stop
4/3/2024	Virtual	1:00 p.m.	3:50 p.m.

MEETING OBJECTIVES

- Recap the February RPAC meeting and provide the status of previous action items.
- Provide an update on APS's stance in the Western Market.
- Discuss APS's ongoing 2023 All-Source RFP and any status updates.
- Discuss stakeholder comments surrounding the 2023 IRP.
- Provide an overview of APS's Summer Preparedness plan.
- Forecast next steps and future RPAC engagement opportunities.

Attendees	Organization	Title/Role
Omayya Ahmad	APS	Manager, Regulatory Compliance
Jeffrey Allmon	Pinnacle West - APS	Senior Attorney
Sandy Bahr	Sierra Club	Director, Grand Canyon Chapter
Murphy Bannerman	Western Resources	Government Affairs Manager
Ann Becker	APS	Vice President, Sustainability
Tara Beske	APS	Business Advisor, Resource Management
Vern Braaksma	APS	Senior Account Manager
Chris Camacho	Greater Phoenix Economic Council	President & CEO
Anne Carlton	APS	Manager, Environmental Support
Adam Constable	APS	Federal/State Regulatory Consultant
Yessica Del Rincon	APS	Communications Consultant
Matthew Derstine	Snell & Wilmer Law	Partner
Sage Dillon	APS	Manager, Strategic Stakeholder Communications
Bentley Erdwurm	Residential Utility Consumer Office	Public Utilities Analyst
Mike Eugenis	APS	Manager, Resource Planning & Analysis
Jill Freret	APS	Director, Resource Integration & Fuels
Stephen Jennings	Griffith Energy	Carolina Power Partners Asset Manager
Autumn Johnson	Tierra Strategy	CEO
Sam Johnston	Interwest Energy Alliance	Policy Manager
Todd Komaromy	APS	Director, Resource Planning
Rachael Leonard	APS	Manager, Regulatory Compliance
Matthew Lind	1898 & Co.	Director of Resource Planning
Nitin Luhar	Mitsubishi	Consultant

Akhil Mandadi	APS	Senior Engineer, Resource Planning
Dugan Marieb	Pine Gate Renewables	Regulatory Associate
Claire Michael	Wildfire AZ	Director, Climate Equity
Tyler Moore	APS	Manager, Resource Management Market Policy
Britney Morgan	APS	Federal/State Regulatory Consultant
Pamela Nicola	APS	Manager, Sustainability
Amanda Ormond	Western Grid Group	Director
David Peterson	APS	Corporate Strategy Advisor
Michael Philipsen	APS	Senior Communications Consultant
Nicole Rodriguez	APS	Consultant, Strategic Communications
Alex Routhier	Western Resource Advocates	Senior Clean Energy Policy Analyst
Tim Rusert	APS	Director
Derek Seaman	APS	Director, Resource Acquisition
John Sherry	Holland & Hart LLP	Associate
Robin Shropshire	Griffith Energy	Asset Manager
Jackie Solares	St. Vincent de Paul	Director, Sales and Business Development
Kelly Spence	APS	Senior Analyst
Reece Taylor	APS	Financial Analyst
Jacob Tetlow	APS	Executive Vice President, Operations
Kent Walter	APS	Director, Western Market Affairs
Laura Wickham	SWEEP	Senior Arizona Associate
Cynthia Zwick	Residential Utility Consumer Office	Director

Matt Lind | 1898 & Co./Director of Resource Planning | Welcome & Meeting Agenda

- No questions.

Kent Walter | APS/Director, Western Market Affairs | Western Market Update

Summary: Kent Walter, Director of Western Market Affairs, began the meeting with a thorough breakdown of the two upcoming Day-Ahead markets, CAISO's EDAM and SPP's Markets Plus. Kent gave an overview of the current status of both markets, discussed the results of the recent Western Markets Exploratory Group study, and explained the benefits (in the form of reduced production costs and planning reserve margins) that joining one of these markets would provide APS and its customers. Kent closed out his presentation by sharing with stakeholders that APS is currently leaning towards joining SPP's Markets Plus, as it currently would provide the highest value to the company and customers.

- **Comment - RPAC Member:** There are various potential costs of moving out of the energy imbalance market including for cutting over and testing in a Markets+ solution. I would like to see an evaluation which includes cost for joining the market also include the lost opportunity cost during cutover.
- **Response - Kent Walter:** The WMEG study was not inclusive of all the benefits, and its design was limited to try and capture production costs. The WMEG study does include the costs of not being part of EIM except during any testing period. Additionally, EDAM and Markets plus have both Day-Ahead and Real-Time markets.

- **Comment - RPAC Member:** I am hesitant to support APS's leaning towards SPP because there are still items that are pending approval. I hold up Pathways as an initiative that is trying to solve governance issues related to the market.
- **Question - RPAC Member:** Is the most likely SPP Markets Plus footprint the first option listed on slide 8, and would a slight advantage over EDAM have any gravity in APS's mind?
 - **Response - Kent Walter:** A variety of different footprints were studied to provide APS comfort around the number of different scenarios. APS does have a preference towards the market having similar features to an ISO/RTO market. This preference is not binding, but it allows other utilities the information to start being able to elect their preferences. APS anticipates a binding decision near the end of this year.
- **Question - RPAC Member:** Will the binding statement come at the end of the year, or is that when you expect your initial market preference?
 - **Response - Kent Walter:** We anticipate the initial market preference will be within this month. This allows FERC to know that there is a desire for this market as they are weighing their options. We don't anticipate a binding commitment until the end of the year.
- **Question - RPAC Member:** What are SRP and TEP's conversations with APS are like? Can you provide additional clarification on SPP's 5-minute market alternative?
 - **Response - Kent Walter:** SPP has a 5-minute market that couples with their day ahead market. Similar to how CAISO is a market operator today, SPP is a market operator today, operating a similar structure to what the Markets+ structure would be. APS is certainly talking to other utilities. I would prefer not to preempt anything on behalf of TEP or SRP and to let them manage their own stakeholder processes with where they are.
- **Question - RPAC Member:** Are you familiar with the Brattle studies that have been conducted for NV Energy and Idaho Power, and do you have a reaction to the results of those studies?
 - **Response - Kent Walter:** APS is familiar with the results of those studies. APS is not planning on engaging Brattle and doing additional studies for production costs because there are bigger buckets of benefits that dwarf production costs and APS has the WMEG production cost results.
- **Question - RPAC Member:** Do you think you might study PRM production benefits in the near term?
 - **Response - Kent Walter:** That is something that APS will be looking at.
- **Question - RPAC Member:** What can we expect your letter to say?
 - **Response - Kent Walter:** The letter will talking about APS's preference towards a Markets+ market design, characteristics of the market that we like associated with it, how it provides customer protections, how it ensures reliability, creates opportunities for customer savings and has a long-term outlook.
- **Question - RPAC Member:** Will you say whether or not APS would join, or put money up for Markets+ in your letter?
 - **Response - Kent Walter:** APS's leaning is caveated until we know more about the market footprint and what FERC approves as the final tariff design.
- **Question - RPAC Member:** Is there a subsequent type of commitment to EDAM that would require you to put money down?
 - **Response - Kent Walter:** There is a cost, it is not the same uplift cost. A lot of the cost associated with EDAM is consultation work. It's a different structure in that regard.
- **Question - RPAC Member:** What is the timing for having to do that?
 - **Response - Kent Walter:** I'm not familiar with a specific date because it is developing that existing market and there is a little more flexibility in terms of its timing.

Jill Freret | APS/Director, Resource Integration & Fuels | 2023 ASRFP Update

Summary: Jill Freret, Director of Resource Integration & Fuels, gave an update regarding the 2023 All Source RFP. Jill explained that APS is currently seeking approximately 1000 MW of capacity and at least 700 MW of renewables with this RFP, with a focus on projects that can be in-service between 2026 and 2028. Jill also gave updates on the status of two important upcoming projects for APS, Sundance and Redhawk. Both of these projects include additional natural gas units to APS's fleet and serve as an important way to reliably and affordably serve customers.

- **Question - RPAC Member:** What firm is your independent monitor?
 - **Response - Jill Freret:** Merrimack Energy is the independent monitor, and it is staff approved. They were the independent monitor not only for the beginning of this RFP, but also through this last piece and decision to reopen competition around this Sundance opportunity.
- **Question - RPAC Member:** Did APS bid into its own RFP?
 - **Response - Jill Freret:** APS did not bid into this RFP.
- **Question - RPAC Member:** When will you be applying for your CEC on Redhawk?
 - **Response - Jill Freret:** That is intended for July 8th.
- **Question - RPAC Member:** Is \$50 million the maximum or minimum project size?
 - **Response - Jill Freret:** \$50 million is the minimum project size in the plan of administration.
- **Question - RPAC Member:** Can you provide an update on the Sundance CEC?
 - **Response - Jill Freret:** We received the Sundance CEC. The comment period for the air permit process concluded in Pinal County, and it is now in the 45-day review period with the EPA.
- **Question - RPAC Member:** On slide 13, has incremental gas generation increased from 400MW to 500MW?
 - **Response - Jill Freret:** That's right, we are at 487MW with those two projects.
- **Question - RPAC Member:** Can you talk about what percentage of hydrogen the turbines are going to be capable of, the timeline for that, and the replacement of the pipelines?
 - **Response - Jill Freret:** There is a lot of interest in pursuing that hydrogen burning capability into the future. This is going to require the production of hydrogen, the ability to transport the hydrogen and the ability to burn it in the actual generators. The current LM6000s that are going to be installed at Redhawk and Sundance have tested between 35 and 40% hydrogen blend. We expect there to be an opportunity in the future as the technology advances for the engines to burn at 100% hydrogen. That is not what was proposed to us in this RFP or what we are seeing as market ready right now. It is something we are actively pursuing in discussion with the Pipelines and expect to see evolution in that space. We also expect that as associated tax credits get finalized, that the market itself will drive developments in that area.
- **Question - RPAC Member:** How does APS compare resources in its ASRFP when there are unknown expenses that would be required to generate hydrogen with these same turbines?
 - **Response - Jill Freret:** You are correct that the specific costs associated with the future hydrogen conversion were not included in this evaluation because they are unknown, and the timing is unknown. The reason we selected these projects is that they did compete favorably relative to all other projects proposed in the ASRFP based on what we know today.
- **Question - RPAC Member:** Is it your understanding that the existing pipelines cannot be used for even a blend with hydrogen?
 - **Response - Jill Freret:** There have been no firm determinations made about exactly what it would take for them to carry both. There is some belief that it is possible, but it is unclear right now. The timing will likely accelerate as there is a better sense of the economic drivers like tax credits and finalization in that space. Our sustainability group is engaged on that.
- **Question - RPAC Member:** Can you provide clarification on how Sundance and Redhawk are being compared to the non-gas projects in the RFP.
 - **Response - Jill Freret:** From an Acquisitions standpoint, when APS goes to the market and identifies particular opportunities, we evaluate whether a resource at a particular location that meets particular needs will be a good fit. We can't guarantee that the prices that come in for any proposal are going to be that good fit that we think they could be. Ultimately, they get evaluated using the qualitative matrix that is applied across all proposals that we received, then the quantitative modeling pulls all of those in in the same way as well.
 - **Response - Mike Eugenis:** We use the same LTCE software that we used for the IRP whenever we build portfolios with the bids that come in from the ASRFP. Everything that gets bid in gets loaded into that software package, and then the model is able to create a reliable portfolio into the future and solve for the least cost portfolio with the subset of bids we provided. That is how they are competing against all technologies. Resources have to be picked by the LTCE software package and be a part of that least cost portfolio.

- **Question - RPAC Member:** APS is committing to building gas turbines at a higher rate than initially outlined in its IRP. Can you give more clarification on this aspect of the planning process?
 - **Response - Mike Eugenis:** It is important to note that the IRP doesn't use specific bid data in its creation. The IRP shows what the most economic portfolio consists of at a particular price level for different resources. In the ASRFP, we found a competitive bid that was incremental gas to what was picked in the IRP. This is a betterment of economics from what we had previously assumed. The IRP itself is not purely deterministic in the action plan window of the resources we are going to acquire. Ultimately, we have to be able to procure these resources from real counterparties in the market. As we get updated pricing from those real counterparties, we take that into account to ensure that we secure the best deal and most savings for our customers.
- **Question - RPAC Member:** National data I've seen indicates that solar is the cheapest resource, can you clarify how APS selects natural gas as the cheapest resource.
 - **Response - Mike Eugenis:** It is important to note that maintaining reliability into the future does not mean that there is a single resource type that you invest in. Metrics like LCOE and LCOG do not fully capture the value that a resource brings to maintaining a reliable and affordable system into the future. The best way to do that is through the creation of a portfolio and the benchmarking of that portfolio against others and that's what the LTCE software does.
- **Question - RPAC Member:** Is APS concerned by the difference between the number of turbines planned in the IRP and the number of turbines scheduled for construction in the next 15 years.
 - **Response - Mike Eugenis:** It is important to note that the IRP uses generalized data in its creation, so it isn't going to be a precise indicator of the exact resources that we are going to be able to procure from the market. As APS gets real market pricing from the ASRFP, we take that into account in making sure that we are creating the most affordable and reliable portfolio for customers. It is prudent for the utility to take in the latest cost information when procuring resources for our customers.
- **Question - RPAC Member:** Has APS underestimated the amount of gas that it will be adding?
 - **Response - Mike Eugenis:** I appreciate the concern here, maybe we can follow up offline to run through some of the more detailed aspects of this.

10-Minute Break

- **Follow-up - Jill Freret:** I would like to follow up on some of the questions from before the break by referring to my initial slide and some of its details. It is important to note that the capacity of clean energy projects that APS is pursuing is over 5 times the capacity of Natural Gas projects that it is pursuing. This includes 3,000 MW of renewables and 3,000 MW of battery storage projects.
- **Question - RPAC Member:** Can you offer any commentary on why LM6000s are being selected by Arizona utilities.
 - **Response - Jill Freret:** I can't speak to why others are selecting LM6000s, but I can tell you that the proposals we received in our ASRFP that included LM6000 technology were the most competitive. The quick start, fast ramping, flexible nature of those machines is such that they fill an important need in the portfolio. I trust that others are doing the same analysis looking for the equipment that best fits their need in the most cost-effective way.
- **Question - RPAC Member:** If APS is building dozens of new gas turbines that have life expectancy into the 2060's and 2070's, how does APS plan to keep its clean commitment of zero carbon by 2050?
 - **Response - Jill Freret:** We are on track for meeting our 2030 interim milestone, which is a 45% renewable 65% clean by 2030. The IRP does show us on track to meet that, and our expectation as we approach 2050 and remain committed to meet our 100% clean, carbon-free goal is that technology will have advanced such that we will be utilizing hydrogen in existing facilities and that we are on track and intentional about still meeting that clean commitment.
 - **Response - Todd Komaromy:** We are anticipating technology advancements to help get us there. Those are still being developed and we are tracking as many avenues of those as possible.
- **Question - RPAC Member:** Are you looking at impacts such as the potential carbon standard for power plants and the Good Neighbor Plan?

- **Response - Jill Freret:** That is something that we are looking at. We are aware of the potential impacts of the Good Neighbor Plan and are working through that as it continues to develop.

Mike Eugenis | APS/Manager, Resource Plan & Analysis | 2023 IRP Stakeholder Comment Responses

Summary: Mike Eugenis, Manager of Resource Planning provided an update on the IRP stakeholder comment process. APS is required to file a response to stakeholder comments that were filed earlier in the year by May 31, 2024. The Resource Planning team is currently reviewing those comments and putting together the response. The main topics that came out of the stakeholder comments were The Preferred Portfolio & Four Corners Early Exit Cases, Natural Gas Build into the Future, Modeling Specifics, Western Markets Discussion and Timeline for Future IRPs. A comparison of the Preferred Plan to the Four Corners early exit cases was also provided.

- **Question - RPAC Member:** Will there be an opportunity for RPAC members to preview your responses prior to the May RPAC Meeting?
 - **Response - Mike Eugenis:** We are going to be putting together comments over these next couple of weeks. If there are specifics that we can address for you as we put those comments together, we are happy to share that information with you. We want to ensure that we make it through our internal reviews and that we are in a good place with those comments before we start broadcasting them to the wider audience.
- **Question - RPAC Member:** Do my questions from January still live somewhere?
 - **Response - Todd Komaromy:** I have a list of the questions from when we had the discussion.

Tim Rusert | APS/Director, Power Supply Services | ACC Summer Preparedness

Summary: Timothy Rusert, Director of Power Supply Services, closed out the meeting by giving an overview of APS's presentation that will be shared at the upcoming ACC Summer Preparedness workshop that will be held on April 23, 2024.

- **Question - RPAC Member:** [Referring to the solar eclipse] This is not going to happen for another 40 Years in the area, correct?
 - **Response - Tim Rusert:** It is odd that we have two of these in 6 months, but it is an extended window before we are expected get another one.

Matt Lind | 1898 & Co./Director of Resource Planning | Next Steps & Closing Remarks

- No questions.